

AMENDMENTS TO THE CLAIMS

The following listing of claims replaces all previous listings and versions of claim in this application.

Claims 1. to 5. (Cancelled)

6. (Currently Amended) A field emission backplate comprising a planar body or thin film of amorphous semiconductor based material, and a plurality of emitter sites formed by laser crystallisation of crystallization of respective portions of the planar body or thin film of amorphous semiconductor based material.

7. (Currently Amended) The ~~method~~ field emission backplate of claim 6, wherein the semiconductor based material is silicon or an alloy thereof.

8. (Original) A field emission device comprising the field emission backplate of claim 6.

9. (Previously Presented) The field emission device of claim 8, wherein the field emission device is a vacuum device, wherein the emitter sites of the backplate act as an emission source in the device.

10. (Previously Presented) The field emission device of claim 9, further comprising a substrate, a field emission backplate, and an evacuated space and a transparent window, wherein the field emission backplate is formed upon the substrate and the evacuated space is located between the field emission backplate and the thin film transparent window metal or metallised phosphor.

11. (Previously Presented) The field emission device of claim 8, further comprising a wide band-gap light emitting material, into which the electrons from the emitter sites of the backplate are emitted in use.

12. (Currently Amended) The field emission device of claim 11, further comprising a substrate, the field emission backplate on one side of which is formed with the plurality of emitter sites, the wide band-gap light emitting material comprising a light emitting polymer, and a transparent metal or metallised phosphor, wherein the field emission backplate is formed upon the substrate, and one surface of the light emitting polymer is disposed on [[a]] the plurality of emitter sites of the field emission backplate, the thin film transparent metal window being disposed on another surface of the light emitting polymer.

13. (Previously Presented) The field emission device of claim 8, wherein the device is a display device.

Claims 14. to 38. (Cancelled)

39. (Currently Amended) A method of forming the field emission backplate of claim 6 comprising:

providing a planar body of amorphous semiconductor based material upon a substrate;
and

laser ~~erystallising~~ crystallizing at least a portion of the amorphous semiconductor based material;

wherein upon ~~erystallising~~ crystallizing the amorphous semiconductor based material a plurality of emitter sites are formed.

40. (Previously Presented) The method of claim 39, wherein the planar body of amorphous semiconductor based material is provided by depositing a thin film of material upon the substrate.

41. (Previously Presented) The method of claim 39, wherein the semiconductor based material is silicon or an alloy thereof.

42. (Currently Amended) The method of claim 39, further comprising the step of performing laser ~~erystallising~~ crystallizing using an excimer or Nd:YAG laser.

43. (Previously Presented) The method of claim 42, wherein the excimer laser is a KrF laser.

44. (Currently Amended) A field emission backplate comprising a planar backplate member substantially comprising an amorphous semiconductor based material, and a plurality of grown tips substantially comprising a crystalline semiconductor based material formed by laser ~~crystallisation~~ crystallization on the backplate member.

45. (Previously Presented) The field emission backplate of claim 44, wherein the substantially planar backplate comprises a thin film of amorphous semiconductor based material.

46. (Previously Presented) The field emission backplate of claim 44, wherein the amorphous semiconductor based material is silicon or an alloy thereof.

47. (Previously Presented) The field emission backplate of claim 44, wherein the plurality of tips are grown in a manner resulting in each having a sharp, pointed shape.

48. (Previously Presented) The field emission backplate of claim 44, wherein the plurality of tips are grown and etched simultaneously.

49. (Previously Presented) The field emission backplate of claim 44, wherein the crystalline semiconductor based material is a silicon.

50. (Currently Amended) The field emission backplate of claim 44, wherein each of the tips is formed on a respective ~~crystallised~~ crystallized area of the planar member.

51. (Previously Presented) A field emission device comprising the field emission backplate according to claim 44.

52. (Currently Amended) The field emission device of claim 51, wherein the plurality of grown tips comprise an array of profiled tips formed by the selective growth of crystalline semiconductor based material on a plurality of ~~crystallised~~ crystallized areas of the substantially planar backplate comprising a thin film of amorphous semiconductor based material.

53. (Previously Presented) The field emission device of claim 52, wherein the device is a vacuum device, and wherein tips act as an emission source in the device, in use.

54. (Previously Presented) The field emission device of claim 51, further comprising a substrate, an evacuated space and a transparent window, wherein the field emission backplate is formed upon the substrate and the evacuated space is located between the field emitting backplate and the transparent window.

55. (Previously Presented) The field emission device of claim 52, further comprising a wide band-gap light emitting material into which electrons from the tips are emitted.

56. (Previously Presented) The field emission device of claim 55, further comprising a substrate, the wide band-gap light emitting material, and a transparent window, wherein electrons from the tips are emitted into the wide band-gap light emitting material.

57. (Previously Presented) The field emission device of claim 56, wherein the wide bank-gap light emitting material is a light emitting polymer.

58. (Previously Presented) The field emission device of claim 56, wherein the transparent window is a thin film transparent metal.

59. (Previously Presented) The field emission device of claim 56, wherein one surface of the light emitting material is disposed on the plurality of tips of the field emission

backplate and the transparent window is disposed on another surface of the light emitting material.

60. (Previously Presented) The field emission device of claim 52, wherein the device is a display device.

61. (Previously Presented) The field emission device of claim 52, wherein the tips of the field emission backplate are of a density of at least 100 per square micron.

62. (Currently Amended) A method of forming a field emission backplate according to claim 44, the method comprising:

depositing a thin film of amorphous semiconductor based material upon a substrate;
locally laser ~~crystallising~~ crystallizing plurality of areas of the thin film amorphous semiconductor based material; and

growing crystalline semiconductor based material upon each of the plurality of ~~crystallised~~ crystallized areas of thin film amorphous semiconductor based material.

63. (Currently Amended) The method of claim 62, further comprising the steps of depositing the thin film of amorphous semiconductor based material by plasma enhanced chemical ~~vapour~~ vapor deposition.

64. (Currently Amended) The method of claim 62, further comprising the steps of ~~crystallising~~ crystallizing the plurality of areas of thin film amorphous semiconductor based material by exposure to at least one pulse laser interference pattern.

65. (Currently Amended) A method of ~~crystallising~~ crystallizing areas of thin film amorphous semiconductor based material for use in the field emission backplate of claim 44, the method comprising:

forming a laser interferometer by splitting and recombining a laser beam;
placing a thin film of amorphous semiconductor based material in the plane of the recombination of the laser beam;

locally ~~crystallising~~ crystallizing areas of the thin film of amorphous semiconductor based material by subjecting the thin film to at least one laser pulse wherein the ~~crystallised~~ crystallized areas generated in the thin film amorphous semiconductor based material correspond to the interference pattern of the laser.

66. (Currently Amended) The method of claim 65, wherein for a backplate of amorphous semiconductor based material, wherein the semiconductor based material is hydrogenated amorphous silicon, the laser operates at a wavelength of around 532 nm to ~~maximise~~ maximize absorption.

67. (Previously Presented) The method of claim 65, wherein the laser is a Nd:YAG laser.